

1 STATE OF NEW MEXICO
2 ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
3 OIL CONSERVATION DIVISION
4 CASES 9825 & 9826
5
6 EXAMINER HEARING

7

8 IN THE MATTER OF:

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Application of Sage Energy Company
for a Unit Agreement, Lea County,
New Mexico.

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Application of Sage Energy Company
for Waterflood Expansion, Directional
Drilling, and to Amend Division Order
No. R-8505, Lea County, New Mexico

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TRANSCRIPT OF PROCEEDINGS

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20 BEFORE: MICHAEL E. STOGNER, EXAMINER

21

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STATE LAND OFFICE BUILDING

23

SANTA FE, NEW MEXICO

24

November 29, 1989

25

ORIGINAL

A P P E A R A N C E S

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1 HEARING EXAMINER: I'll call the next case,
2 Number 9825.

3 MR. STOVALL: Application of Sage Energy
4 Company for a Unit Agreement, Lea County, New Mexico.

5 HEARING EXAMINER: At this time, I'll call
6 for appearances.

7 MR. CARR: Mr. Examiner, my name is Jim
8 Bruce from the Hinkle Law Firm in Albuquerque,
9 representing the Applicant.

10 I have three witnesses to be sworn, and I
11 would request that this case be consolidated with Case
12 9826.

13 HEARING EXAMINER: Are there any other
14 appearance or objection to consolidate Case Numbers
15 9825 and 9826?

16 In that case, we'll call Case Number 9826
17 at this time.

18 MR. STOVALL: Application of Sage Energy
19 Company for a waterflood expansion, directional
20 drilling, and to amend Division Order No. R-8505, Lea
21 County, New Mexico.

22 HEARING EXAMINER: Are there any other
23 appearances in this case other than the one in 9825?
24 Appears there are none, Mr. Bruce.

25 Will the witnesses please stand at this

1 time to be sworn.

2 (Thereupon, the witnesses were sworn.)

3 LEE PATRICK

4 Called as a witness herein, having been duly sworn
5 upon his oath, testified as follows:

6 EXAMINATION

7 BY MR. BRUCE:

8 Q. Mr. Patrick, would you please state your
9 full name and your city of residence.

10 A. Lee Patrick, San Antonio, Texas.

11 Q. What is your occupation and who do you work
12 for?

13 A. I'm a division landman for Sage Energy
14 Company.

15 Q. Have you previously testified before the
16 OCD?

17 A. No, I have not.

18 Q. Would you please summarize your educational
19 and work background?

20 A. I have a bachelor's in business
21 administration from North Texas State University. For
22 the last 11 and a half years I've been employed in the
23 oil and gas business as a landman, and the last six
24 and a half years with Sage Energy.

25 Q. Does your area of responsibility include

1 Southeast New Mexico?

2 A. Yes, it does.

3 Q. Were you in charge of the land matters
4 involved in Case Numbers 9825 and 9826?

5 A. Yes.

6 MR. BRUCE: Mr. Examiner, are the witness's
7 credentials acceptable?

8 HEARING EXAMINER: They are.

9 Q. Mr. Patrick, state briefly what Sage seeks
10 in these two applications.

11 A. In Case 9825, Sage has applied for approval
12 of the West Tres Papalotes Penn Unit Agreement, which
13 covers 1,120 acres of state and fee lands in portions
14 of Sections 29, 30, 31 and 32, in Township 14 South,
15 Range 34 East, Lea County, New Mexico.

16 The unitized formation is the Permo Penn
17 Limestone. Sage seeks to unitize the area for a
18 secondary recovery waterflood project which is the
19 subject of the 9826 case.

20 Q. Would you please refer to Exhibit A and
21 describe its contents for the Examiner.

22 A. This is a land plat which outlines the
23 proposed unit area and identifies the separate tracts
24 which comprise the unit area. The tracts are formed
25 according to separate common mineral ownership. There

1 are six tracts in the unit area, and Sage operates all
2 the tracts.

3 The land included in the unit area is the
4 West half of Section 29, the East half of Section 30,
5 the East half of Section 31, and the Northwest quarter
6 of Section 32, Township 14 South, Range 34 East; and
7 it's about 800 acres of state land and 320 acres of
8 fee land.

9 Q. Would you please describe the unitized
10 formation?

11 A. The unitized formation is the Permo Penn
12 Limestone underlying the unit area, which is defined
13 in the Unit Agreement as the oil bearing limestone,
14 the top of which was encountered at a depth of 10,392
15 feet, and the base of which was encountered at a depth
16 of 10,510 feet in the Sage Energy Company New Mexico
17 State No. 3 Well, located 1,160 feet from the north
18 line, and 560 feet from the east line of Section 31,
19 Township 14 South, Range 34 East, Lea County, as
20 recorded on the BHC Acustilog of the well dated April
21 26, 1983.

22 This unitized formation will include all
23 subsurface points throughout the unit area correlative
24 to these depths.

25 Q. Would you please refer to the Unit

1 Agreement marked as Exhibit B, and describe its main
2 points for the Examiner.

3 A. Exhibit B is a copy of the Unit Agreement
4 for the proposed unit. This Unit Agreement was
5 drafted based upon recommendations of similar
6 agreements which have been previously approved by the
7 Commissioner of Public Lands and the Oil Conservation
8 Division. It describes the unit area and the unit
9 formation.

10 The unitized substances include all oil and
11 gas produced from the unitized formation. The
12 designated unit operator is Sage Energy Company. The
13 Unit Agreement does provide for a method of removal of
14 the unit operator, and it also provides for expansion
15 of the unit area. However, at this time Sage does not
16 foresee any expansion of the unit.

17 Q. Is this a voluntary unit?

18 A. Yes, it is.

19 Q. Have all working interest and royalty
20 interest owners joined in the unit?

21 A. Yes. Sage Energy is the sole working
22 interest owner. The sole royalty interest owners are
23 John Etcheverry, Adella P. Tindle, Josephine Selvage,
24 and the Commissioner of Public Lands of the State of
25 New Mexico.

1 Etcheverry, Tindle and Selvage have signed
2 the Unit Agreement, and the Commissioner of Public
3 Lands has granted preliminary approval of the unit,
4 pending OCD approval.

5 Q. And is Exhibit C the letter from the
6 Commissioner giving its preliminary approval?

7 A. Yes, it is.

8 Q. Regarding interest ownership, how long has
9 Sage operated the wells in this proposed unit area?

10 A. It started in 1972. And, therefore, we're
11 quite familiar with all the interest owners in the
12 unit.

13 Q. In your opinion, will the granting of the
14 unitization and the waterflood applications be in the
15 interests of conservation, the prevention of waste,
16 and the protection of correlative rights?

17 A. Yes.

18 Q. Were Exhibits A, B and C prepared by you or
19 under your direction, or compiled from company
20 records?

21 A. Yes, they were.

22 MR. BRUCE: Mr. Examiner, I move the
23 admission of Exhibits A, B and C.

24 HEARING EXAMINER: Exhibits A, B and C will
25 be admitted into evidence at this time.

1 MR. BRUCE: Pass the witness.

2 EXAMINATION

3 BY MR. STOGNER:

4 Q. Mr. Patrick, let's look at page number 11,
5 the "Tract Participation." Could you cover that a
6 little bit?

7 A. Meaning what? This form that I put in here
8 was obtained from our engineers.

9 HEARING EXAMINER: So will you have another
10 witness, Mr. Bruce, to testify to these matters?

11 MR. BRUCE: Yes, sir.

12 HEARING EXAMINER: Okay. Mr. Bruce, I have
13 no further questions of this witness at this time.
14 You may be excused.

15 MR. BRUCE: I would call Mr. Downing to the
16 stand.

17 JAMES T. DOWNING

18 Called as a witness herein, having been duly sworn
19 upon his oath, testified as follows:

20 EXAMINATION

21 BY MR. BRUCE:

22 Q. Mr. Downing, would you please state your
23 full name and city of residence.

24 A. James Terrell Downing, Midland, Texas.

25 Q. Who do you work for and in what capacity?

1 A. I'm a petroleum geologist for Sage Energy.

2 Q. Have you previously testified before the
3 OCD?

4 A. No, I haven't.

5 Q. Would you please outline your educational
6 and work experience.

7 A. Bachelor of Science in geology, 1978. From
8 1978 to '81, uranium exploration in South Texas; and
9 from '81 until the present, petroleum geologist for
10 Sage Energy.

11 Q. Does your area of responsibility include
12 Southeast New Mexico?

13 A. Yes, it does.

14 Q. Are you familiar with the geology relating
15 to these two applications?

16 A. Yes, I am.

17 MR. BRUCE: Mr. Examiner, are the witness's
18 credentials acceptable?

19 HEARING EXAMINER: They are.

20 Q. Mr. Downing, I would ask you to refer to
21 Exhibit D, and particularly parts 5 and 8 of that
22 exhibit. Would you please look at them and describe
23 their contents for the Examiner.

24 A. Okay. Exhibit D-5 is a net isoporosity map
25 of the Permo Penn lime, with a contra interval of five

1 feet greater than five percent porosity, outlining the
2 field area of the West Tres Papalotes Penn.

3 And Exhibit 8 is a structure map on the
4 same horizon.

5 Q. Could you please describe a little bit the
6 geology of the Bough "C" formation, please?

7 A. The Bough "C" produces, in the West Tres
8 Papalotes field, is a limestone, it's essentially
9 algal mat depositional environment. It's extremely
10 permeable, porous limestone.

11 Q. Is this field continuous across the
12 proposed unit area?

13 A. Yes, it is.

14 Q. And does the unit area, essentially,
15 include the entire West Tres Papalotes pool?

16 A. Yes, it does.

17 Q. In your opinion, has the pool been
18 adequately defined by development?

19 A. Yes, it has.

20 Q. If you would refer back to Exhibit A, there
21 are a number of dry-hole markers around that field.
22 Were those wells drilled to the Penn formation?

23 A. Yes, they were. They were tests for that
24 particular formation and they were dry.

25 Q. In your opinion, are the granting of these

1 applications in the interest of conservation and the
2 prevention of waste?

3 A. Yes, they are.

4 Q. And were parts 8 and 5 of Exhibit D
5 prepared by you or under your direction?

6 A. Yes, they were.

7 MR. BRUCE: Mr. Examiner, I move the
8 admission of Exhibits D-5 and D-8.

9 HEARING EXAMINER: Exhibits D-5 and D-8
10 will be admitted into evidence.

11 MR. BRUCE: I have no further questions of
12 the witness at this time.

13 HEARING EXAMINER: I have no questions of
14 this witness at this time, either. I may later.

15 You may continue, Mr. Bruce.

16 MR. BRUCE: I call Mr. Hardy to the stand.

17 JAY H. HARDY

18 Called as a witness herein, having been duly sworn
19 upon his oath, testified as follows:

20 EXAMINATION

21 BY MR. BRUCE:

22 Q. Mr. Hardy, would you please state your full
23 name and give your city of residence.

24 A. My name's Jay Henderson Hardy, Midland,
25 Texas.

1 Q. What is your job and who do you work for?

2 A. I'm a petroleum engineer for Sage Energy
3 Company.

4 Q. Have you previously testified before the
5 OCD as a petroleum engineer?

6 A. Yes, I have.

7 Q. And your credentials were accepted as a
8 matter of record?

9 A. That's correct.

10 Q. As part of your job, have you been in
11 charge of the engineering matters related to the
12 proposed West Tres Papalotes Field Unitization and
13 Waterflood?

14 A. Yes, I have.

15 MR. BRUCE: Mr. Examiner, I tender the
16 witness as an expert.

17 HEARING EXAMINER: Mr. Hardy is so
18 qualified.

19 Q. Mr. Hardy, regarding the waterflood portion
20 of this case, what does Sage Energy seek permission to
21 do?

22 A. We're essentially seeking expansion of the
23 pilot waterflood which was granted under Order No.
24 R-8505. And we want to unitize the productive acreage
25 and we want to sidetrack the John Etcheverry, Jr. "A"

1 Well No. 2, which is located 2,080 feet from the north
2 line and 560 feet from the west line of Section 29,
3 and kick it off 500 feet, at a depth of approximately
4 5,500 feet, and the bottom of the well will be
5 approximately 10,600 feet and it will be within 50
6 feet of the target point, 1,580 feet from the lower
7 north line and 560 feet from the west line of Section
8 29. This well will be converted to injection and we
9 will inject through perforations of approximately
10 10,402 to 10,470 feet.

11 Q. Why does Sage Energy seek to expand its
12 pilot project? And, if you would, go briefly into the
13 production history of this field.

14 A. Right. This was granted, like I said,
15 under Order R-8505 as a pilot project. And Exhibit
16 D-6, in the blue handout here, will show that the
17 pilot has responded. There's two Exhibit D-6's
18 there. It would be the John Etcheverry well, which is
19 John Etcheverry No. 1, or the new designation would be
20 29-1.

21 After approximately a year of injection
22 there, the well went from five barrels to--peaked out
23 at almost 21 barrels a day for approximately three or
24 four months. And there was no water breakthrough.
25 The well declined to about five barrels a day and is

1 currently peaking again, showing response.

2 It's bearing about 15 barrels a day, and we
3 feel that it will probably come on up, and still no
4 water breakthrough. The problem here at this point is
5 we just don't have enough water injection to make this
6 thing successful.

7 Q. Would you go into the history of this field
8 and discuss the state of depletion of this pool
9 regarding primary production?

10 A. Right. This field was developed in 1972 by
11 Mark Production, and Mr. Amini (phonetic) came in and
12 drilled the remaining wells. They were perforated in
13 the Permo Penn there, Bough "C", and acidized. And
14 the wells have cums, some of them, over 100,000
15 barrels. But it is definitely in the primary--late to
16 primary stage of depletion.

17 Q. Would you please describe how the
18 production will be allocated among the various tracts
19 under the Unit Agreement?

20 A. Okay. The production will be allocated
21 based on ultimate primary, which is the cum production
22 plus remaining primary.

23 Q. In your opinion, does the participation
24 formula contained in the Unit Agreement allocate the
25 produced unitized oil and gas to the tracts on a fair

1 and reasonable basis?

2 A. In my opinion, it does.

3 Q. Have you calculated the amount of secondary
4 reserves which you estimate will be obtained by the
5 waterflood?

6 A. I've made a stab at calculating it, but the
7 net pay is very difficult to determine here. But we
8 believe that it will recover as much secondary as it
9 has primary. And we're also using Mobile's vacuum,
10 middle Penn waterflood 17 miles to the south, which is
11 the only reported Penn waterflood in New Mexico, and
12 that particular flood will recover a secondary to
13 primary ratio of one-to-one, and we believe that this
14 has the possibility of doing that.

15 Q. What is the total amount you estimate will
16 be recovered?

17 A. We're looking at a million barrels of
18 secondary.

19 Q. And what is the estimated life of the
20 waterflood?

21 A. 27 years.

22 Q. Will the waterflood operations in this pool
23 prevent waste and result with reasonable probability
24 in the increased recovery of substantially more oil
25 from the pool than would otherwise be recovered?

1 A. Yes, it will.

2 Q. In your opinion, will unitization and
3 secondary recovery benefit the royalty and working
4 interest owners in this pool?

5 A. Yes, it will.

6 Q. Would you please refer back to Exhibit D-5
7 and discuss the waterflood expansion.

8 A. Exhibit D-5 is a net pay Isopach with a
9 porosity cutoff of five percent. In red there, we
10 have the contemplated waterflood expansion. Since the
11 wells are very deep here and we're talking about
12 better than a half-million dollars per well, we plan
13 to proceed on a step-wise fashion from the north to
14 the south.

15 With converting the 29-2 which we have
16 already reentered and set a plug as our whip stock,
17 and converting that to injection and then pushing the
18 oil to the south, assuming that we continue to see
19 response, we'll drill Well 29-3, which is in the
20 southeast to the southwest of 29, and then we'll drill
21 31-4, which is in the southwest to the southeast of
22 31. And we will convert 31-2 to injection, which is
23 now a producing well. So the expansion will be in a
24 step-wise fashion due to economics.

25 Q. Does Sage Energy request that the Order in

1 this matter contain an administrative procedure for
2 approving unorthodox well locations and for changing
3 producing wells to injection wells?

4 A. Yes, we do.

5 Q. Briefly, what additional facilities does
6 Sage Energy envision installing for its production
7 system?

8 A. Like I stated, the total cost here will be
9 \$1.5 million, which includes drilling the two
10 producing wells, converting one well to injection and
11 sidetracking another well; and laying and burying the
12 water injection lines.

13 We do not plan to centralize the batteries,
14 since there are only two batteries there and they're
15 both on pipeline. That's the overall plan.

16 Q. Please describe, in more detail, the
17 waterflood application which is Case 9826.

18 A. Okay. We've submitted Form C-108, and if
19 you want to go from there--

20 Q. Okay. Looking back at Exhibit A, would you
21 please reiterate the initial injection wells in this
22 unit?

23 A. Right. If you look at Exhibit A, you can
24 see that 30-1 is the current pilot injection well and
25 we are injecting 475 barrels a day in there at 2,700

1 pounds.

2 29-1 is the old John Etcheverry Eddy No. 1
3 which we're seeing the response in, and the triangle
4 around 29-2 is the one that we plan to convert to
5 injection power ability 500 feet north of that
6 location as shown on Exhibit A.

7 And then we plan to drill the well in
8 Section 29, which will be in the southeast to the
9 southwest, as a producing well, and we'll drill a well
10 down in Section 31, which will be in the southwest to
11 the southeast.

12 And then we will convert 31-2, which is now
13 a producing well. It's about a five-barrel well.

14 Q. Referring to Exhibits E and F, would you
15 please identify them briefly?

16 A. Okay. Exhibit E is the radius of the
17 examination there that you were looking for, and
18 inside that radius there are the wells that have been
19 drilled. And all of those wells are to the Bough
20 "C".

21 And then Exhibit F is just a compilation of
22 the wells, when they were drilled, their type
23 completion, the casing program, and the perforation
24 intervals.

25 Q. And Exhibit F lists the wells within the

1 area of review, right?

2 A. The area of review; that's correct.

3 Q. Would you please refer to Exhibit G and
4 describe its contents briefly?

5 A. Okay. Exhibit G is the well-bore diagrams
6 of the wells that were plugged and the way they were
7 plugged. And to just briefly--there's five of them
8 here--just to briefly cover them, I think you can see
9 that where they were cut off, they were adequately
10 cemented inside and outside the cutoff point and also
11 at the casing shoe, and perforations; the cast-iron
12 bridge plug were set in cement on top of that. And we
13 feel that all the dry holes and the producing wells
14 were adequately plugged to prevent any migration of
15 fluids.

16 Q. Would you please now refer to Exhibit H and
17 discuss your proposed reworking of the Etcheverry
18 well.

19 A. All right. Exhibit H is the old John
20 Etcheverry A-2, which is now designated 29-2. Earlier
21 this year we went into that well and we tied back at
22 eight and five-eighths to the surface, and we cemented
23 it with 250 sacks which we circulated--yeah, we
24 circulated a hundred sacks, so we tied that back
25 adequately.

1 Then we set a plug at 5,498. You can see
2 that that four and a half was cut off there at 5,580,
3 so we wanted to stay above that. So our plan is to
4 sidetrack there at 5,498 and go 500 feet to the north
5 on the bottom hole location.

6 Q. Would you please describe briefly the
7 proposed injection operations, the amounts of
8 pressures, please?

9 A. All right. Like I stated, we are currently
10 injecting into 30-1 at 475 barrels, 2,700 pounds,
11 which is above the stated pack rate, but we performed
12 a step-rate test on that and determined that we were
13 not packing the formations, so the state later on gave
14 us permission to go to 3,000 pounds.

15 We plan to start out here in 29-2. It will
16 probably be around December, because that area is
17 probably pressured up, so we're looking at 500 barrels
18 a day, about 2,000 pounds, for our start rate.

19 Q. You do seek permission later on, after the
20 appropriate step-rate test, to inject up to 3,000
21 p.s.i.?

22 A. That's correct. We will install equipment
23 because the Mobile flood to the south is operating
24 around 3,500 pounds of surface pressure, and we're
25 probably looking at the same thing.

1 Q. Where does the injected water come from?

2 A. From a freshwater well which is located on
3 the pad of the 30-1.

4 Q. Do you have any plans to inject produced
5 water?

6 A. We plan to reinject produced water.

7 Q. Referring to Exhibit I, is the injected
8 water compatible with the formation water?

9 A. Yes, it is.

10 Q. And what is Exhibit I?

11 A. Well, Exhibit I is a compatibility test
12 that was run by Halliburton Lab, and shows that what
13 actually happens there is when you add more of that
14 freshwater to the formation water, you really lose
15 your scaling tendency. So we were actually doing all
16 the good by using freshwater.

17 Q. You mentioned the one freshwater source by
18 the injection well. Are there any other freshwater
19 sources there?

20 A. Yes, there is one other well that I know
21 of, and that's right on the pad of the 29-1, which is
22 also an exhibit in that--filed along with the C-108.

23 Q. So is Exhibit J a water sample from the
24 Section 29 well?

25 A. That's correct.

1 Q. And is there a well in Section 30, also?

2 A. There's a freshwater well that we are
3 using, which is on that pad with 30-1, and that is the
4 water which is here in Exhibit I.

5 Q. Are there any open faults or other
6 hydrologic connections in this area?

7 A. Not to my knowledge.

8 Q. So you do not anticipate that the injection
9 operations will affect freshwater sources?

10 A. No.

11 Q. What project allowable does Sage oil
12 request?

13 A. We request capacity allowable.

14 Q. And finally, were all offset operators and
15 lease owners notified of the waterflood application?

16 A. That's correct.

17 Q. And are the certified return receipts
18 submitted as Exhibit K?

19 A. That's correct.

20 Q. In your opinion, is the unitized management
21 and operation of this pool necessary to effectively
22 carry on secondary recovery operations?

23 A. Yes, that's right.

24 Q. In your opinion, will the granting of these
25 applications be in the interests of conservation, the

1 prevention of waste and the protection of correlative
2 rights?

3 A. Certainly will.

4 Q. Were Exhibits D through K prepared by you
5 or under your direction or compiled from company
6 records?

7 A. That's correct.

8 MR. BRUCE: Mr. Examiner, I move the
9 admission of Exhibits D through K.

10 HEARING EXAMINER: Exhibits D through K
11 will be admitted into evidence at this time.

12 MR. BRUCE: No further questions of the
13 witness at this time.

14 EXAMINATION

15 BY MR. STOGNER:

16 Q. Mr. Hardy, on Exhibit No. I, you refer to
17 the source water as from the New Mexico State No. 3.
18 Where is that well at?

19 A. Yeah, right. I beg your pardon?

20 Q. Where is that well located?

21 A. That's 31-3. You're looking at Exhibit A.
22 We drilled that well in '82, I believe, it was.

23 Q. And that water is from the Pennsylvania
24 formation?

25 A. That's correct.

1 Q. Is this water presently being utilized in
2 your injection Well No. 30-1?

3 A. No, it is not.

4 Q. What water is being utilized in that well?

5 A. At this point we're only injecting
6 freshwater.

7 Q. Freshwater. And that freshwater is from
8 your source water well that you referred to earlier?

9 A. That's right. Right there on the pad with
10 the 30-1.

11 Q. And that water will also be utilized for
12 your new injection well, is that correct?

13 A. That's correct. That well has about a
14 2,000-barrel-a-day capacity, from the Ogallala, at 160
15 feet.

16 Q. There are no other windmills or water wells
17 in the area?

18 A. Not in the unitized area. I believe there
19 is a well outside the unitized area, Mr. Examiner, but
20 I'm not familiar with it.

21 Q. It's not within that one-half-mile area of
22 review?

23 A. No, sir.

24 HEARING EXAMINER: I have no other
25 questions of this witness at this time.

1 Is there anything else, Mr. Bruce?

2 MR. BRUCE: I have nothing further to
3 present, Mr. Examiner.

4 HEARING EXAMINER: Does anybody else have
5 anything further in either Case 9825 or 9826? Then
6 these cases will be taken under advisement.

7 We'll take about a 10-minute recess at this
8 time, in preparation for the next case.

9 (Thereupon, a recess was taken.)

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